WHAT IS CLAIMED IS:

1. An optical gain correction filter comprising:

a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a light transmitting board, wherein

when the light with the wavelength λ enters at the incident angle θ, the transmissivity is assumed to be T1 (λ, θ) ($0 \leqq T1(\lambda, \theta) \leqq 1$), and the thickness of each thin film is set to increase the transmissivity T1 (λ_0, θ) when the incident angle θ increases close to the predetermined maximum incident angle θmax with respect to the incident light with the wavelength λ_0 entering the multilayer structure.

2. The optical gain correction filter according to claim 1, wherein the thin films which construct the multilayer film structure are formed by alternately stacking SiO_2 with the refractive index of 1.46 and TiO_2 with the refractive index of 2.3.

3. The optical gain correction filter according to claim 2, having the transmissivity of 70% or lower so that the wavelength λ_0 of the incident light coincides with the position of a ripple of a band pass filter.

4. The optical gain correction filter according to claim 1, wherein the thin films which construct the multilayer film structure are formed by alternately combining one of SiO_2, MgF_2, Al_2O_3 or SiO and one of

TiO_2, CeO_2, ZrO_2, Ta_2O_5 or ZnS.

5. An optical gain correction filter comprising:

a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a light transmitting board, wherein

when the light with the wavelength λ enters at the incident angle θ, the transmissivity is assumed to be $T1(\lambda, \theta)$ $(0 \leqq T1(\lambda, \theta) \leqq 1)$, and the thickness of each thin film is set to increase the transmissivity $T1(\lambda, \theta_0)$ when the wavelength λ increases close to the predetermined maximum wavelength λmax with respect to the incident light entering the multilayer structure at the incident angle of θ_0.

6. The optical gain correction filter according to claim 5, wherein the thin films which construct the multilayer film structure are formed by alternately stacking SiO_2 with the refractive index of 1.46 and TiO_2 with the refractive index of 2.3.

7. The optical gain correction filter according to claim 6, having the transmissivity of 70% or lower so that the wavelength λ_0 of the incident light coincides with the position of the ripple of a band pass filter.

8. The optical gain correction filter according to claim 5, wherein the thin films which construct the multilayer film structure are formed by alternately combining one of SiO_2, MgF_2, Al_2O_3 or SiO and one of

TiO_2, CeO_2, ZrO_2, Ta_2O_5 or ZnS.

9. An optical gain correction filter comprising:

a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a light transmitting board, wherein

when the light with the wavelength λ enters at the incident angle θ, the reflectivity is assumed to be $R1(\lambda, \theta)$ ($0 \leqq R1(\lambda, \theta) \leqq 1$), and the thickness of each thin film is set to increase the reflectivity $R1(\lambda_0, \theta)$ when the incident angle θ increases close to the predetermined maximum incident angle θmax with respect to the incident light with the wavelength λ_0 entering the multilayer structure.

10. The optical gain correction filter according to claim 9, wherein the thin films which construct the multilayer film structure are formed by alternately stacking SiO_2 with the refractive index of 1.46 and TiO_2 with the refractive index of 2.3.

11. The optical gain correction filter according to claim 10, having the transmissivity of 70% or lower so that the wavelength λ_0 of the incident light coincides with the position of the ripple of a band pass filter.

12. The optical gain correction filter according to claim 9, wherein the thin films which construct the multilayer film structure are formed by alternately combining one of SiO_2, MgF_2, Al_2O_3 or SiO and one of

TiO_2, CeO_2, ZrO_2, Ta_2O_5 or ZnS.

13. An optical gain correction filter comprising: a multilayer film structure formed by stacking a

plurality of thin films with different diffractive indexes on a light transmitting board, wherein

when the light with the wavelength λ enters at the incident angle θ, the reflectivity is assumed to be R1 (λ, θ) $(0 \leqq R1(\lambda, \theta) \leqq 1)$, and the thickness of each thin film is set to increase the reflectivity R1 (λ, θ_0) when the wavelength λ increases close to the predetermined maximum wavelength λmax wit respect to the incident light entering the multilayer structure at the incident angle of θ_0.

14. The optical gain correction filter according to claim 13, wherein the thin films which construct the multilayer film structure are formed by alternately stacking SiO_2 with the refractive index of 1.46 and TiO_2 with the refractive index of 2.3.

15. The optical gain correction filter according to claim 14, having the transmissivity of 70% or lower so that the wavelength λ_0 of the incident light coincides with the position of the ripple of a band pass filter.

16. The optical gain correction filter according to claim 14, wherein the thin films which construct the multilayer film structure are formed by alternately combining one of SiO_2, MgF_2, Al_2O_3 or SiO and one of

TiO_2, CeO_2, ZrO_2, Ta_2O_5 or ZnS.

17. An optical apparatus comprising,

a semiconductor laser light source with the wavelength of λ_0;

a scanning section for scanning a laser beam radiated from the semiconductor laser light source;

a photodetector for receiving scattered light from the scanned laser beam; and

an optical gain correction filter, which is arranged on an optical path from the semiconductor laser light source to the photodetector, and has a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a light transmitting board, in which when light with the wavelength λ enters at the incident angle θ, the transmissivity is assumed to be T1 (λ, θ) ($0 \leqq$ T1 (λ, θ) $\leqq 1$), and the thickness of said each thin film is set to increase the transmissivity T1 (λ_0, θ) when the incident angle θ increases close to the predetermined maximum incident angle θmax with respect to the incident light with the wavelength λ_0 entering the multilayer structure; wherein

the optical gain correction filter is arranged in the direction to increase the transmissivity T1 (λ, θ) as the incident angle of the scattered light increases.

18. The optical apparatus according to claim 17, wherein the optical gain correction filter is provided

on the optical path, and on the reflection surface of the scanning section or in front of the photodetector.

19. An optical apparatus comprising,

a semiconductor laser light source with the wavelength of λ_0;

a scanning section for scanning a laser beam radiated from the semiconductor laser light source;

a photodetector for receiving scattered light from the scanned laser beam; and

an optical gain correction filter, which is arranged on an optical path from the semiconductor laser light source to the photodetector, and has a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a light emitting board, in which when light with the wavelength λ enters at the incident angle θ, the transmissivity is assumed to be T1 (λ, θ) $(0 \leqq T1 (\lambda, \theta) \leqq 1)$, and the thickness of said each thin film is set to increase the transmissivity T1 (λ, θ_0) when the wavelength λ increases close to the predetermined maximum wavelength λmax with respect to the incident light entering the multilayer structure at the incident angle of θ_0; wherein

the optical gain correction filter is arranged in the direction to increase the transmissivity T1 (λ, θ) as the incident angle of the scattered light increases.

20. The optical apparatus according to claim 19,

wherein the optical gain correction filter is provided on the optical path, and on the reflection surface of the scanning section or in front of the photodetector.

21. An optical apparatus comprising,

a semiconductor laser light source with the wavelength of λ_0;

a scanning section for scanning a laser beam radiated from the semiconductor laser light source;

a photodetector for receiving a scattered light from the scanned laser beam; and

an optical gain correction filter, which is arranged on an optical path from the semiconductor laser light source to the photodetector, and has a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a board to transmit a light, in which when a light with the wavelength λ enters at the incident angle θ, the reflectivity is assumed to be R1 (λ, θ) $(0 \leqq R1(\lambda, \theta) \leqq 1)$, and the thickness of said each thin film is set to increase the reflectivity R1 (λ_0, θ) when the incident angle θ increases close to the predetermined maximum incident angle θmax with respect to the incident light with the wavelength λ_0 entering the multilayer structure; wherein

the optical gain correction filter is arranged in the direction to increase the reflectivity R1 (λ, θ) as the incident angle of the scattered light increases.

22. The optical apparatus according to claim 21, wherein the optical gain correction filter is provided on the optical path, and on the reflection surface of the scanning section or in front of the photodetector.

23. An optical apparatus comprising,

a semiconductor laser light source with the wavelength of λ_0;

a scanning section for scanning a laser beam radiated from the semiconductor laser light source;

a photodetector for receiving scattered light from the scanned laser beam; and

an optical gain correction filter, which is arranged on an optical path from the semiconductor laser light source to the photodetector, and has a multilayer film structure formed by stacking a plurality of thin films with different diffractive indexes on a light transmitting board, in which when light with the wavelength λ enters at the incident angle θ, the reflectivity is assumed to be R1 (λ, θ) $(0 \leqq R1(\lambda, \theta) \leqq 1)$, and the thickness of said each thin film is set to increase the reflectivity R1 (λ, θ_0) when the wavelength λ increases close to the predetermined maximum wavelength λmax with respect to the incident light entering the multilayer structure at the incident angle of θ_0; wherein

the optical gain correction filter is arranged in the direction to increase the reflectivity R1 (λ, θ)

as the incident angle of the scattered light increases.

24. The optical apparatus according to claim 23, wherein the optical gain correction filter is provided on the optical path, and on the reflection surface of the scanning section or in front of the photodetector.